



## FIRM PROFITABILITY ON FINANCIAL LEVERAGE OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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### Abstract

*This study was carried out to evaluate the effect of firm profitability on financial leverage of industrial good firms in Nigeria. The study used profitability of industrial good firms as dependent variable, while financial leverage of same consumer good firms as dependent variable. The traditional panel least square regression (PLSR) was used in the model. The study applied panel data models on annual data of consumer good firms within the scope. In order to circumvent endogeneity problems, panel estimation techniques of fixed and random effects was adopted in this study, Panel data estimation allows for the control of individual-specific effects usually unobservable which may be correlated with other explanatory variables included in the specification of the relationship between dependent and explanatory variables using Hausmann test. Result from the Hausmann test statistics reveals that market value had a negative and non-significant effect on financial leverage of industrial good firms in Nigeria. The researcher therefore recommended that Profitability of the firm should be prioritised since it had a significant positive effect on financial leverage of industrial good firms in Nigeria. When a firm is profitable, it lead to efficiency of their capital structure mix.*

**Keywords:** Firm profitability, firm leverage, industrial goods, firm, panel least squares, firm size.

### Introduction

Firm characteristics are those specific traits that distinguish one company from the other. These features normally influence companies' decisions especially strategic decisions such as financing and investment decisions. Such characteristics include firm size, leverage, liquidity, sales growth, firm age, dividend policy, market share, asset tangibility, auditor type, industry type industry type and many others. This study focused on firm size, profitability and asset tangibility as factors that affect leverage levels



of industrial goods firms in Nigeria. Firm size is a fundamental concept that refers to the magnitude of a company's operations, assets, revenues, or market capitalization. Firm profitability is a basic notion that assesses a company's capacity to create money from its operations. Tangible assets are physical assets that can be employed in the production or operation of a firm.

Larger firms often have more diversified operations and revenue streams, which can contribute to greater stability and cash flow predictability. This stability enhances their ability to service debt and reduces the risk of default. Hence, larger firms can afford to take on higher levels of debt relative to their equity, as they have a stronger capacity to absorb financial shocks compared to smaller ones. According to Graham and Harvey (2021) profitable companies have greater financial flexibility, allowing them to choose their capital structure based on their needs and objectives. This flexibility allows them to optimize debt and equity mix based on risk tolerance, growth plans, and cost of capital considerations. Tangible assets provide a source of collateral that can be pledged to secure debt financing. Lenders typically prefer tangible assets as collateral because they are easier to value, monitor, and seize in the event of default. As a result, firms with higher asset tangibility have greater access to debt financing, allowing them to incorporate more debt into their capital structure (Hovakimian, Opler, & Titman, 2019).

The major focus of this study was to examine the effect of firm profitability on financial leverage of listed industrial goods firms in Nigeria. The industrial goods sector consists of the companies that produce and sell capital goods to other businesses. In contrast to the consumer goods sector that produces goods and services directly consumed by households, the industrial goods sector provides capital goods to other businesses for manufacturing and construction. This sector contributes massively to the growth and development of the Nigeria economy. Thus, their financing mix becomes paramount as any failure to have the right mix of debt in their capital structure can cause forced liquidation as lost the entire stakeholders' chain.

### **Statement of the problem**

An erroneous finance mix decision may result in an unexpected and unfavourable outcome such as liquidation of companies. The decision between equity and debt financing is a significant challenge to management, requiring financial managers to rely heavily on their skills, experience, and intelligence because the capital mix decision has a long-



term impact on the firm's future cash flow and going concern status. The extensive body of related previous empirical studies on firm characteristics and financial leverage has presented somewhat conflicting results, others agreeing and some disagreeing with important theories of firms' characteristics globally. The contrasting results warrant further research though most of the studies done in Nigeria focused on firm characteristics and financial leverage of other sectors other than the industrial goods sectors. Most of the studies carried out on the subject matter were done outside Nigeria and did not focus of the industrial goods sector (Chin, Zakaria & Keong, 2021; Anjar 2021; Ani & Puspitosari 2021).

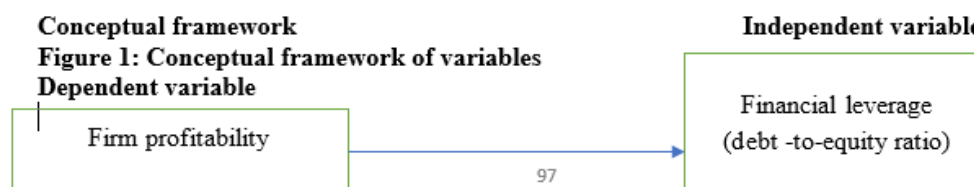
In Nigeria, Amahalu (2019), Bashir (2019), Okegbe, Onyinye & Amahalu (2019) and Fagbemi et al. (2022) did not consider the financial leverage of industrial goods sector. Hence, based on this identified gap, this study examined the effect of firm characteristics on the financial leverage of listed industrial goods firms in Nigeria.

### Objective of the study

The objective of this study is to investigate the effect of firm profitability on financial leverage of listed industrial goods firms in Nigeria.

### Research hypothesis

**Ho<sub>1</sub>:** Firm profitability has no significant effect on financial leverage of listed industrial goods firms in Nigeria.



*Source: Researcher's Computation (2024)*

### Firm characteristics

According to Mbonu & Amahalu (2021), Firm characteristics are the various types of information presented in financial statements of business organizations that serve as predictors of the firms' accounting information quality and performance. Firm characteristics can also be defined as the behavioural patterns of company's operation which can enable them to achieve their objectives throughout the period of their operations (Amahalu 2019). Firm attributes are firm characteristics or specific traits



that distinguish one company from the other. They are those other features that distinguishes one company from the other. These features normally influence company decisions and information disclosure as well as risk disclosure in the financial report. The qualities of a company differ from one another. The characteristics of a company can be established based on the relevant information presented in its financial statements for a specific accounting period (Bunea & Dinu, 2020).

### **Firm profitability**

Profitability refers to the earning power or working performance of the business which add up to Investment (Verma, 2018). According to Adetoso and Akinselure (2016) profit is characterized as the capacity an investment has, to acquire a sizable income from its consistent use in business. Firm profitability is a basic notion that assesses a company's capacity to create money from its operations. It is an important indicator of a company's financial health, efficiency, and potential for value creation. Firm profitability is defined as a company's ability to make earnings or profits in relation to its costs and investments. Net profit margin, return on assets (ROA), return on equity (ROE), and earnings per share (EPS) are some of the financial measures and indicators that can be used to measure it (Titman & Martin, 2011). These indicators reveal the company's efficiency in earning profits from its resources and investments.

Profitability can affect financial leverage in the sense that, that profitable firms can bear the interest cost of the firm. A highly profitable firm will have low high interest cover, whereas the reverse is the case for lowly profitable firms. Thus, a company that is stabilized in terms of profitability can adequate finance its operations using debt so as to enjoy the tax savings from interest payments.

### **Financial leverage**

Financial Leverage refers to the debt financing percentage in a company's capital structure. It is a measure of the use of debt versus the use of equity to finance the assets and activities of an organization (Audax, 2018). It is one of the financing decisions that firms have to make. Debt financing is mainly in the form of loan and bond but other form such as securing goods on credit also exist. High usage of debt financing leads to an increase in financial leverage and is associated with greater risk of bankruptcy. However, it is also associated with various advantages such as maintaining company ownership intact, tax deductions, and low transactional costs (Mboi, Muturi & Wanjare, 2018). On the other hand, equity financing



entails raising money by selling of company shares to investors who acquire ownership in the company (Audax, 2018). Equity financing may also come in the form of reinvesting the company's profits.

The capital structure decision is essential to many other corporate finance decisions. Management decisions like as dividend policy, merger and acquisition finance, capital budgeting, and so on are all linked to capital structure decisions. What factors impact management's decision to include more or less debt in their capital structure has piqued the interest of both finance experts and practitioners. However, the main problem associated with the decisions of capital mix is the discovery of the optimal capital structure for a company; considering that each companies have their distinguished characteristics. The optimal capital structure represents the ideal mix of debt and equity that maximizes the value of the company and minimizes the cost of capital. Finding the optimal capital structure involves considering factors such as the company's risk profile, industry norms, tax considerations, financial flexibility, etc.

The cost of equity is usually the claim on earnings provided to shareholders for their ownership stake. Although equity financing is associated with lower risks of bankruptcy, it is an expensive source of financing as investor demand a higher rate of return (Ahmadu, 2019). Companies can use leverage to finance their assets; instead of issuing stock to raise capital, companies can use debt financing to invest in business operations in an attempt to increase shareholder value (Kenton, 2021). The financial leverage of a company depends on the choice made by the management to either use debt or equity to fund the operations of the company. Financial leverage is often gauged using the debt ratio, equity ratio, and debt to equity ratio (Enekwe, Agu & Eziedo, 2014).

### **Debt-equity ratio**

The debt-equity ratio is a leverage ratio that calculates the weight of total debt and financial liabilities against total shareholders' equity. It indicates the relative proportion of shareholders' equity and debt used to finance a company's assets (Okoye, Amahalu, Nweze & Obi, 2016). The debt-to-equity ratio is a financial as well as liquidity ratio that compares a company's total debt to total equity. The debt-to-equity ratio shows the percentage of company financing that comes from creditors and investors. It is expressed as x%. A debt equity ratio of below 100% is low while a debt-equity ratio of above 100% is higher. And a debt equity ratio of 100% means that half of the business assets are financed with debt (Kanwal & Nadeem, 2013). Debt-to- equity ratio is calculated as;

Debt-equity ratio =





Variable	LN PERSARAN SHN -WT EST	Probability Value	Inference
FILE	-605148	0.0000	I(1)
PRCF	169227	0.0000	I(1)

**Source:** Author's e-view 10 output with data in Appendix One

From the result of LN, Perseran and Shin unit root test contained in Table 1, all the variables are integrated at 1(1) meaning that is stationary at first difference. Given this same orders of integration, the pooled panel Least Square Regression Method was used integration, the pooled panel Least Square Regression Method was used

### Tests of Autocorrelation Using Correlogram Q-Statistics

**Table 2: Tests of autocorrelation**Correlations are asymptotically consistent approximations

Correlations are asymptotically consistent approximations

FILE, profi)	FILE, prof(+i)	i	lag	lead
**  .	**  .	0	-0.1549	-0.1549
. *  .	**  .	1	-0.1416	-0.1485
. *  .	. *  .	2	-0.1307	-0.1366
. *  .	. *  .	3	-0.0836	-0.1393
. *  .	. *  .	4	-0.0755	-0.1433
.   .	. *  .	5	-0.0405	-0.1174
.   .	. *  .	6	-0.0137	-0.0829
.   .	. *  .	7	-0.0168	-0.0755
.   .	.   .	8	-0.0203	-0.0280
.   .	.   .	9	-0.0090	-0.0151
.   .	.   .	10	0.0000	0.0000
.   .	.   .	11	0.0000	0.0000
.   .	.   .	12	0.0000	0.0000
.   .	.   .	13	0.0000	0.0000
.   .	.   .	14	0.0000	0.0000
.   .	.   .	15	0.0000	0.0000
.   .	.   .	16	0.0000	0.0000
.   .	.   .	17	0.0000	0.0000
.   .	.   .	18	0.0000	0.0000
.   .	.   .	19	0.0000	0.0000
.   .	.   .	20	0.0000	0.0000

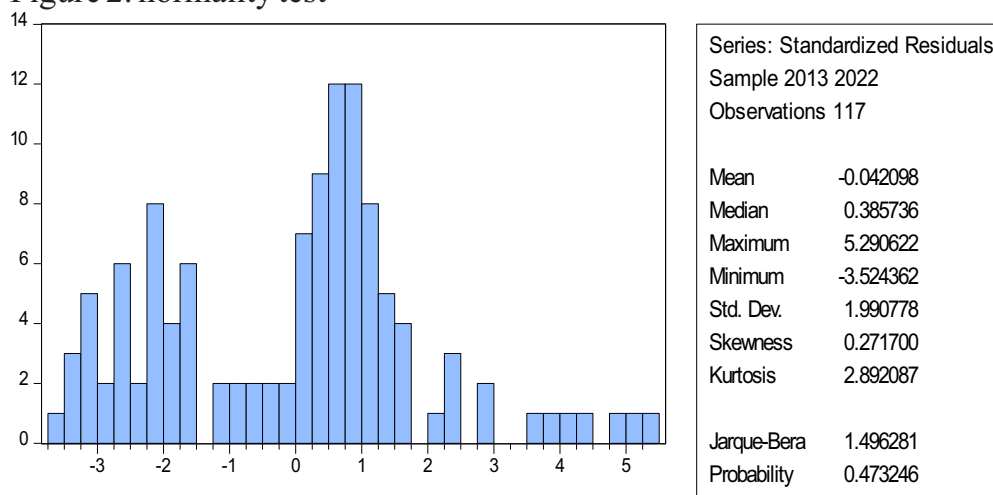


**Source:** Author's analysis using e-view 10 output with data in Appendix One.

From Table 2 above, it shows auto correlation testing using Gjung box Q-statistics. Jung box Q- statistics is higher order autocorrelation tests that are used to test the reliability of the data set used in estimation. When the probability of the Q- Statistics is  $< 5\%$ , it means significant. From the study above, Result reveals that all the probability of the Q-stat is significant meaning that there is no autocorrelation.

### Tests Of Normality Distribution Of The Cross Sectional And Idiosyncratic Identifiers Using Normality Chart

Figure 2: normality test



**Source:** Researcher's analysis with data in appendix one (2023)

This test is conducted to ensure that the data employed in this study are normally distributed. Observing from the normality diagram in Figure 1 above, as well as the Jarque-Bera statistic value of approximately 1.5 and its corresponding p-value of approximately 0.47% in the table beside the diagram above, which is  $> 5\%$  significant level, indicates that the data are normally distributed.

### Test of Hypothesis two

$H_{01}$ : Firm profitability has no significant effect on financial leverage of listed industrial goods firms in Nigeria

**Table 3** Table of Panel least square showing FILE and PROF in



### Nigeria Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.687211	1	0.0032

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LPROF	0.230057	0.096449	0.002055	0.0032

Cross-section random effects test equation:

Dependent Variable: LFILE

Method: Panel Least Squares

Periods included: 10

Cross-sections included: 12

Total panel (unbalanced) observations: 117

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.091408	0.202489	-15.26706	0.0000
LPROF	0.230057	0.082677	2.782596	0.0064

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.838186	Mean dependent var	-2.564281
Adjusted R-squared	0.819516	S.D. dependent var	1.821003
S.E. of regression	0.773625	Akaike info criterion	2.428980
Sum squared resid	62.24355	Schwarz criterion	2.735888
Log likelihood	-129.0953	Hannan-Quinn criter.	2.553581
F-statistic	44.89290	Durbin-Watson stat	0.999158
Prob(F-statistic)	0.000000		





**Source:** *Author's analysis using e-view 10 output with data in Appendix One*

### **Decision criteria**

Accept  $H_0$  if the p-value of the coefficients are  $>$  than 5% level of significance, otherwise reject  $H_0$  and accept  $H_1$  when the p-value of the coefficient of the parameter estimates are  $<$  5% level of significance.

### **Taking a decision on the rejection or acceptance of the null or alternate hypothesis**

Result reveals that the p-value of the coefficient of firm profitability is  $<$  5% level of significance (0.0064), the researcher rejects the null hypothesis and thereby concluded that firm profitability had significant effect on financial leverage of industrial good firms in Nigeria.

### **Discussion of findings**

From the Panel Least Squares regression result shown in table 4.3.2 above, we used the Correlated Random Effects – Hausmann Test. The Hausmann test value of 8.68 and its corresponding p-value of 0.003 suggest that we fail to accept the null hypothesis at 5% level of significance that random effect model is appropriate for this study and deduce that differences in coefficients are not systematic, therefore we accept and interpret the fixed effect model. In an attempt to know the most reliable estimation model between the fixed effect estimation model and the random effect estimation model, Hausmann test was conducted to test if there is a substantial difference between the estimates of the fixed effect estimator and that of the random effect estimator. Result reveals that fixed effect hypotheses is acceptable because the probability value is significant;

Considering the fixed effect model,  $R^2$  of approximately 84% as well as the adjusted  $R^2$  of approximately 83% is an indication that the model is strongly represented. That is the independent variables explained 83% variations in the dependent variable while the remaining 17% may be explained by variables not included in the model. The F statistic value of 44.8 ( $P=0.000000$ ) indicated that the independent variables jointly impacted on financial leverage of industrial good firms in Nigeria and that the overall model is a good fit.

A keen observation of the result shows that, firm profitability had a positive and significant impact on financial leverage of industrial good firms, such that a percent increase in firm profitability would bring about a 23 per cent increase in firm leverage.

### **Conclusion and Recommendation**

This study is carried out to examine the effect of firm profitability on



financial leverage of industrial good firms in Nigeria. It further used firm profitability as measure of firm characteristics, which also make up the independent variable in this study. Financial leverage was used as the dependent variable. This research covered a ten-year period (2013–2022) made use of secondary data sourced from published annual reports and accounts of 12 purposively selected listed industrial good firms. The Correlated Random Effects – Hausmann Test was employed in analyzing the data obtained. Findings from the study revealed that firm profitability had significant effect on financial leverage of industrial good firms in Nigeria within the period under review. Hence, the researchers' conclude that firm profitability had a significant effect on financial leverage of industrial good firms in Nigeria. From the foregoing, the researchers' therefore recommend that Profitability of the firm should be prioritised since it had a significant positive effect on financial leverage of industrial good firms in Nigeria. When a firm is profitable, it lead to efficiency of their capital structure mix.

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